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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,616	08/10/2001	Eric W. Triplett	960296.97273	5346

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EXAMINER	
HELMER, GEORGIA L	

ART UNIT	PAPER NUMBER
1638	

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/927,616	TRIPLETT ET AL.	
	Examiner	Art Unit	
	Georgia L. Helmer	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10 August 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 8/10/01 + 11/6/02
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. Claims 1-25 are pending and are examined in the instant action.

Information Disclosure Statement

2. Applicant's IDS, forms 1449, filed 10 August 2001 and 8 November 2002, are acknowledged and signed copies included with the Office Action.

Claim Rejections - 35 USC § 112 second paragraph

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 10, and all claims dependent thereon,

- are incomplete method claims because the final step of the method does not produce the desired result, namely controlling crown gall disease on plants.
- "an effective amount" is a relative term for which no comparative basis is given.
- "strain" should be deleted because it is the α–proteobacteria which produces the trifolitoxin.

In claims 4, 13, and 22, it is unclear whether recitations within the parentheticals are limitations or clarifications of the claim.

Correction/clarification is required.

Claim Rejections - 35 USC § 112, first paragraph

Written description

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-3, 8-12 and 17-21 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-3, 8-12 and 17-18 are drawn to a method for controlling crown gall disease comprising introducing on to the plant an effective amount of α–proteobacteria that produces trifolitoxin. These claims encompass any DNA of any sequence from any source that somehow confers trifolitoxin production. Applicants are claiming a genus of sequences, yet there is no description of the structural features that define the genus.

Claims 19-21 are drawn to a biocontrol agent for controlling crown gall disease comprising an α–proteobacteria genetically engineered to produces trifolitoxin. These claims encompass any DNA of any sequence from any source that somehow confers trifolitoxin production. Applicants are claiming a genus of sequences, yet there is no description of the structural features that define the genus.

See *University of California v. Eli Lilly*, 119 F.3d 1559, 43 USPQ 2d 1398 (Fed, Cir. 1997), where it states: "The name cDNA is not in itself a written description of that DNA; it conveys no distinguishing information concerning its identity. While the example provides a process for obtaining human insulin-encoding cDNA, there is no further information in the patent pertaining to that cDNA's relevant structural or physical characteristics; in other words, it thus does not describe human insulin cDNA . . . Accordingly, the specification does not provide a written description of the invention . . ."

Therefore, given the lack of written description in the specification with regard to the structural and physical characteristics of the claimed compositions, one skilled in the art would not have been in possession of the genus claimed at the time this application was filed. (see Written Description Requirement published in Federal Register/Vol.66, No. 4/ Friday, January 5, 2001/Notices; p. 1099-1111.)

Claim Rejections - 35 USC § 112 Enablement

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 4, 13, and 22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 4, 13 and 22 are drawn to Agrobacterium vitis F2/3 (pT2TFXK), ATCC patent Deposit Designation PTA-2356. The specification lacks sufficient evident that the claimed biological material is either 1)

reproducible, 2) known and readily available to the public, or 3) deposited in compliance with 37 CFR 1.801-1.809. If the claimed biological material was deposited under the provisions of the Budapest treaty, Applicant must provide a declaration stating that the claimed biological material was made under the provisions of the Budapest treaty in compliance with 37 CFR 1.801-1.809, and that all restrictions imposed by the depositor on the availability to the public of the deposited biological material will be irrevocably removed upon the grant of the patent. Applicant's attention is directed to 37 CFR §§1.801-1.809, MPEP §§ 2402-2411.05 and In re Lundak 773 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985) for further information concerning the Rules and Regulation for Deposit of Biological Materials for Patent Purposes.

If the deposit of these seeds/cultures/sequences is made under the terms of the Budapest Treaty, then an affidavit or declaration by the applicants, or a statement by an attorney of record over his or her signature and registration number, stating that the seeds/cultures/DNA will be irrevocably and without restriction or condition released to the public upon the issuance of a patent would satisfy the deposit requirement made herein. A minimum deposit of 2500 seeds is considered sufficient in the ordinary case to assure availability through the period for which a deposit must by maintained.

If the deposit has not been made under the Budapest Treaty, then in order to certify that the deposit, meets the criteria set forth in 37 CFR 1.801-1.809, applicants may provide assurance of compliance by an affidavit or declaration, or by a statement by an attorney of record over his or her signature and registration number showing that

(a) during the pendency of the application, access to the invention will be afforded to the Commissioner upon request;

(b) all restrictions upon availability to the public will be irrevocably removed upon granting of the patent;

(c) the deposit will be maintained in a public depository for a period of 30 years or 5 years after the last request or for the enforceable life of the patent, whichever is longer;

(d) the viability of the biological material at the time of deposit will be tested (see 37 CFR 1.807); and

(e) the deposit will be replaced if it should ever become inviable.

9. Claims 1-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Enablement is considered in view of the *Wands* factors (MPEP 2164.01(a)).

The breadth of the claims: Applicant claims are drawn to a method for controlling crown gall disease on plants comprising the step of introducing onto the plant an effective amount of a biologically pure culture of any α–proteobacteria strain that produces trifolitoxin, where the α–proteobacteria may include Agrobacterium, where the

Agrobacterium may include Agrobacterium vitis, where the Agrobacterium is Agrobacterium vitis F2/5 (pT2TFXX) ATCC patent deposit designation PTA-2356, where the α–proteobacteria is genetically engineered to express the tfx operon, or to express SEQ ID NO: 1, where the plant is a grape plant, a fruit tree, a rose plant, or a seed. Also claimed are a biocontrol agent for controlling crown gall disease comprising an α-proteobacteria genetically engineered to produce trifolitoxin, where the α–proteobacteria is Agrobacterium, where the Agrobacterium is Agrobacterium vitis, and where the Agrobacterium is Agrobacterium vitis F2/5 (pT2TFXX) ATCC patent deposit designation PTA-2356.

The enablement issues are "α–proteobacteria", and "plants".

Re: *α–proteobacteria*: Applicant claims all α–proteobacteria, including taxonomically divergent families of gram negative bacteria including human pathogens, animal pathogens, obligate intracellular parasites, as well as photosynthetic bacteria, plant pathogens and nitrogen fixing bacteria. See Triplett, et. al., Expression of trifolitoxin and sensitivity to the rhizobial peptide antibiotic trifolitoxin in a taxonomically distinct groups of α–proteobacteria including the animal pathogen Brucella abortus. Appl. Environ. Microbiol., 1994, vol. 60, pages 4163-4166-Applicant IDS; screens from www.life.umd.edu/classroom/biosci42; printed out). Applicant teaches Agrobacterium, which belongs to the family Rhizobiaceae, which are plant associated soil bacteria including the nitrogen-fixing bacteria as well as Agrobacterium. (Spaink, et. al. in The Rhizobiaceae, 1998, Kluwer Publishers, Netherlands, page xiii). Agrobacteria are special in that Agrobacterium natively are able to colonize and interact with plants in the

unique manner of performing inter-kingdom gene transfer (Spaink, ibid.). It is unpredictable that other bacteria than Agrobacterium would be able to function as desired in the claimed invention, particularly since the target pathogen is also Agrobacterium. It is unclear whether unrelated bacteria would be able to coexist-with or out-compete Agrobacterium. Applicant says (specification, p. 2, ¶ 006) that "different Agrobacterium species are known to normally inhabit and attack plants in different micro-zones of the plants, as well as different plants species", further indicating the unpredictability of the art. Applicant has provided no guidance on how to predictably eliminate inoperable embodiments from a virtually ad infinitum of possibilities other than by random trial and error, which is excessive experimentation and an undue burden. Applicant teaches specifically the Agrobacterium A.vitis F2/5 bearing plasmid pT2TFXX (specification, ¶ 0049).

Re all plants: Applicant claims all plants, unspecified and including the taxonomically divergent species of tomatoes, corn, wheat, roses, grapes, as well as trees, including fruit trees. Applicant teaches Nicotiana glauca (specification, ¶ 0049). Nicotiana are susceptible to Agrobacterium and are not representative of all plants. See Potrykus, Gene Transfer to Cereals: An Assessment, 1990, Biotechnology, 8(6): 535-542 p. 538, column 2, 3rd full ¶. It is unpredictable that plants other than Nicotiana glauca would be able to function as desired in the claimed invention. It is known that Agrobacterium rhizogenes strain K84, a biological control Agrobacterium strain which is commercially used for crown gall disease control on stone fruit plants, is limited to stone fruit plants because the pathogenic Agrobacterium strains of other crops are not

inhibited by K84 (specification, p.3. last line of ¶ 0007). Also it is known that the use of non-tumorigenic Agrobacterium vitis strain F2/5, which is used to occupy ecological niches of grapevine which otherwise might be occupied by tumorigenic Agrobacterium, is ineffective on non-grapevine hosts, as well as being ineffective on various pathogenic Agrobacterium vitis stains. (Specification, p. 3, ¶ 0008).

Applicant has provided no guidance on how to predictably eliminate inoperable embodiments from a virtually ad infinitum of possibilities other than by random trial and error, which is excessive experimentation and an undue burden

In view of the breadth of the claims (any plant, and any α–proteobacteria), the nature of the invention, the unpredictability of the art, the lack the lack of guidance in the specification, undue trial and error experimentations would be required to enable the invention as commensurate in scope with the claims.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 5, 7, 9, 10, 14, 16, 18, 19, 23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Robleto, et. al. Environmental Microbiology, 1998, Vol 64, No. 7, page 2630-2633 (Applicant's IDS).

Robleto et. al. teach a method of controlling crown gall on plants, comprising introducing on to the plant an effective amount of biologically pure culture of an α–proteobacteria, where the α–proteobacteria is Rhizobium, that produces trifolitoxin (Table 1 and 1st full ¶ , page 2631; and Table 3, page 2632), where the α–proteobacteria is engineered to express the trifolitoxin operon, where the α–proteobacteria is engineered to express a pT2TFXK plasmid, where the plant is a seed (page 2631, column 1, ¶s one and two).

Accordingly Robleto et. al. anticipate the claimed invention.

12. Claims 1, 5, 6, 7, 9, 10, 14, 15, 16, 18, 19, and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Robleto as applied to claim 1, 5, 7, 9, 10, 14, 16, 18, 19, 23 and 25 above, in light of Breil, et. al., J. Bacteriol. 1993, vol. 175, pages 3696-3702 (Applicant's IDS), and Breil et al, NCBI Accession No. L06719, locus RHMTFXA2G, 4 August 1993.

The teachings of Robleto et. al. are discussed above. Robleto does not explicitly teach SEQ ID NO: 1. However, the pT2TFXK plasmid taught by Robleto et. al. inherently comprises SEQ ID NO: 1, given the common gene source, gene length, operon content, and author/inventor Triplett, as evidence by Breil et. al. Breil teaches a bacterial DNA sequence which confers trifolitoxin production (Abstract) which is identical to SEQ ID NO: 1. See the enclosed sequence search.

Accordingly Breil anticipates the claimed invention.

Remarks

13. No claims are allowed. Claims 2-4, 8, 11-13, 17, and 20-22 are deemed free of the prior art, given the failure of the prior art to teach or reasonably suggest Agrobacterium or Agrobacterium vitis F2/5 as bacterial host for trifolitoxin production.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Georgia L. Helmer whose telephone number is 571-272-0976. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on 571-272-0804. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Georgia L. Helmer
Patent Examiner
Art Unit 1638
February 7, 2004

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